

QUALITY ASSURANCE SAMPLING PLAN

FOR

LAS CONCHAS FIRE EMERGENCY RESPONSE
13 BATAAN ROAD
SANTA FE, SANTA FE COUNTY, NEW MEXICO

Prepared for

U.S. Environmental Protection Agency Region 6

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1. INTRODUCTION

Weston Solutions, Inc. (WESTON®), the Superfund Technical Assessment and Response Team (START-3), has been tasked by the U.S. Environmental Protection Agency Region 6 (EPA Region 6) under Contract Number EP-W-06-042, Technical Direction Document (TDD) Number TO-0001-11-06-01, to perform sampling activities in conjunction with the Las Conchas Fire. The fire is located in the Santa Fe National Forest to the south and west of Los Alamos, New Mexico, with the main EPA operating base at the State Emergency Operations Center in Santa Fe, New Mexico. START-3 has prepared this Quality Assurance Sampling Plan (QASP) to describe the technical scope of work to be completed at the site as part of the Emergency Response.

1.1 PROJECT OBJECTIVES

START-3 is providing support and technical assistance to EPA Region 6 for the Emergency Response and to collect the data necessary to support the EPA, the State of New Mexico and the Department of Energy (DOE).

The primary objective of the sampling is to determine the concentration of radioactive particulate matter being carried into the smoke plumes from the Las Conchas wildfire that is affecting the areas in and around the Los Alamos National Laboratory (LANL). LANL is a Department of Energy facility that performs work and research in nuclear weapons. There are areas of radioactive waste storage on the facility grounds and areas where radioactive soil and vegetation may be present on the facility.

The objectives of the sampling will be achieved by evaluating data obtained during the field activities through the collection of air samples from selected locations coordinated with the State of New Mexico and the DOE

Air samples will be collected from locations identified with the State of New Mexico and the DOE that would be locations in populated areas surrounding the fire or locations of other importance (community centers, hospitals, evacuation centers). These locations will be chosen based upon the access and availability of power for the air samplers. These air samples will be screened for gross alpha and beta radiation at the command post location and then sent to an off-

site radio-analytical laboratory for analysis of activity from specific radio isotopes and gross alpha and beta counts.

At the beginning of each operational period, a daily operation meeting will be held to discuss tactical objectives of the operation period and health and safety. Every afternoon, a planning meeting will be conducted to determine current situation and plan operations for the next operational period.

1.2 PROJECT TEAM

The Project Team will consist of Heth Parnell, as the START-3 Project Team Leader (PTL); Rebecca Ayers as Field Safety Officer (FSO); and additional START-3 personnel as necessary based upon the duration of the response and tasks associated with the sampling. The PTL will be responsible for the technical quality of work performed in the field and will serve as the START-3 liaison to EPA Region 6 in the field during the site activities. The PTL will also be responsible for providing the EPA On-scene Coordinator (OSC) with updates of progress and estimated costs expended. The PTL, with the concurrence of EPA, will direct START-3 in determining the specific locations for sample collection in the field, in collecting samples as necessary, in logging the activities at each sample location in the field logbook, and in verifying the sample documentation. A START-3 member, acting as the Data Manager, will be responsible for accurate chain-of-custody documentation for the samples during the investigation. The Sample Manager will be responsible for screening the samples and packaging and shipping the samples to the radio-analytical laboratory. The START-3 FSO will be responsible for providing overall site health and safety support.

1.3 QASP FORMAT

This QASP has been organized in a format that is intended to facilitate and effectively meet the objective of the removal assessment. The QASP is organized as follows:

- Section 1 – Introduction
- Section 2 – Site Background
- Section 3 – Sampling Approach and Procedures

- Section 4 – Analytical Methods
- Section 5 – Data Validation
- Section 6 – Quality Assurance

All figures are provided as portable document format (pdf) files. Appendices are provided with the following information:

- Appendix A Site-Specific Data Quality Objectives (DQOs) Table
- Appendix B WESTON and EPA-ERT Standard Operating Procedures (SOPs)
- Appendix C Copy of START-3 TDD TO-0001-11-06-01

2. SITE BACKGROUND

Information regarding the site location, description, and site history are included in the following subsection.

2.1 SITE LOCATION AND DESCRIPTION

The Las Conchas Fire site is located in the Santa Fe National Forest south and west of the town of Los Alamos, New Mexico. The site covers the specific sampling locations being used to place air samplers in populated areas south of the fire location. According to the Unified Command timeline, the fire started at approximately 1300 hours on 26 June 2011 near the Las Conchas geographical location south of Highway 4 and is approximately 65,000 square acres as of 29 June 2011

2.2 SITE HISTORY

On 26 June 2011, at approximately 1300 hours, according to the Unified Command timeline, a fire started near the Las Conchas Mountain in the Santa Fe National Forest approximately 15 miles southwest of the town of Los Alamos. The fire spread towards the north and east driven by winds from the southwest towards LANL and the town of Los Alamos.

The State of New Mexico requested EPA assistance with air sampling on 27 June 2011.

Currently, the Department of Energy and LANL collect air samples as part of routine operations at the LANL site. Their sampling networks remain in place around the LANL site. Additionally, sampling was requested in populated areas around the site, including the Santa Fe metropolitan area.

3. SAMPLING APPROACH AND PROCEDURES

The specific field investigation activities that will be conducted during site sampling are presented in the following subsections. Sampling procedures and sample locations are also included.

3.1 OVERVIEW OF SAMPLING ACTIVITIES

EPA OSC Greg Fife will coordinate with the State of New Mexico and DOE to determine air sampling locations. Actual placement of the air samplers will be performed by the Radiological Emergency Response Team (RERT) and START-3 in areas that are approximately within the breathing zone (4.5-5 feet off the ground) and also away from physical barriers or wind breaks that could affect air flow around the samplers.

START-3 will utilize EPA-owned RADeCO H-810 Air Volume Totalizers air samplers to collect air samples on 2-inch glass fiber filters. Approximately 3600 cubic feet or 100 cubic meters of ambient air will be sampled every 12 hours, or approximately 7200 cubic feet in a 24 hour sampling run.

RERT will utilize EPA-owned HI-Q Medium flow air samplers to collect air samples on 4-inch glass fiber filters. Approximately 20,000 cubic feet of ambient air will be sampled during 24 hour sample collection times.

A START-3 subcontracted laboratory meeting EPA QA/QC criteria will be utilized for all radio-analytical testing unless otherwise directed by EPA OSC. The analytical results will be used for a quantitative determination of the presence of radioactive material in the air that would be believed to be related to the LANL facility and operations.

3.1.1 Data Quality Objectives

The primary objective of the sampling is to determine the concentration of radioactive particulate matter being carried into the smoke plumes from the Las Conchas wildfire that is affecting the areas around the Los Alamos National Laboratory (LANL). LANL is a Department of Energy

facility that performs work and research in nuclear weapons. There are areas of radioactive waste storage on the facility and areas where radioactive soil and vegetation may be present on the facility.

- Determine the level of radioactive material in the particulate matter caused by the Las Conchas Fire
- Speciate the activity from the different radio isotopes that may be present in the particulates to identify radioactivity from naturally occurring sources and radioactivity from LANL related sources from the work and research of nuclear weapons.

This DQO was developed using the seven-step process set out in the *EPA Guidance for Quality Assurance Project Plans: EPA QA/G-5*.

3.1.2 Health and Safety Implementation

At the beginning of each operational period, a meeting will be held in the command post to discuss objectives of the operation period, division assignments, field instrumentation calibration and use, and health and safety. The removal field activities will be conducted in accordance with the site-specific HASP. Activities will be conducted in Level D personal protective equipment (PPE). START-3 will conduct field screening for ionizing radiation and particulate matter in accordance with the site-specific HASP. The Field Safety Officer will be responsible for implementation of the HASP during the field investigation activities.

3.1.3 Mobilization and Command Post Establishment

The START-3 field team will mobilize the equipment required for the removal from the WESTON Regional Equipment Store (RES) warehouses located in Houston and Dallas, Texas, as necessary. The command post will be collocated with the EPA OSC and state assets as needed.

RERT will mobilize sampling teams and equipment from their warehouse in Las Vegas, NV.

3.2 SAMPLING/MONITORING APPROACH

Radioactivity in airborne particulates sampling will be conducted in general accordance with the procedures set forth in EPA Method 900.0 modified. A sample collection and analyses summary table is presented as Table 3-1.

3.2.1 Air Sampling

START-3 and RERT propose to collect up to 18 air samples a day to be analyzed for gross Alpha and Beta contamination, Uranium 234, 235 and 238, Plutonium 239 and 240, Americium 241, Cesium 137 and Strontium 90 from various locations within the operational areas as determined by EPA OSC and state officials. These samples will be collected over 12 or 24 hour periods and will be collected using EPA-owned air samplers that have been calibrated and are appropriate for radio-isotope/radioactivity in air sampling.

3.2.2 Investigation-Derived Wastes (IDW)

It is anticipated that no investigation-derived wastes (IDWs) such as PPE will be generated during the project. If IDW is generated during this response, START-3 and RERT will coordinate with OSC to determine proper management and disposal.

3.2.3 Sampling and Sample Handling Procedures

Samples will be collected using equipment and procedures appropriate to the matrix, parameters, and sampling objectives, specifically START-3 will use the RADeCO H-810 Air Volume Totalizer with 2-inch diameter glass fiber filters. Samplers will be run for approximately 12 hours to collect a total volume of sample of approximately 3600 cubic feet or 100 cubic meters.

RERT will use HI-Q medium-volume air samplers with 4-inch glass-fiber filters set to run for approximately 24 hours at a time to collect approximately 20,000 cubic feet of air across the filter media.

After the samples are collected and brought to the command post they will be screened. The 2-inch glass fiber filters will be screened for gross alpha and beta using the Ludlum Model 3030

Alpha/Beta Radiation Sample counter to determine the presence and relative activity of Radon and the associated daughter isotopes.

The 4-inch glass fiber filters will be screened for gross alpha and beta using the Ludlum Model 2241-2 with a 44-9 Pancake Probe that measures alpha, beta and gamma radiation. The sample will be read with the detection window placed as close as possible directly above the sample media and held for 1 minute. At the end of the reading, the total count will be recorded.

All readings will be collected in counts per minute (cpm) and the pancake probe will be used in counter mode.

Two readings will be collected from all filters, one 1 minute reading upon receipt of the samples at the command post and one 1 minute reading prior to shipping (approximately 12-24 hours after collection). Upon determining the activity, the samples will be held for further decay of background isotopes or shipped overnight to the radio-analytical lab. All samples will be placed into labelled envelopes which will be placed into sealable plastic bags for shipping to the lab.

All clean decontaminated sampling equipment and sample containers will be maintained in a clean, segregated area. All samples will be collected with clean decontaminated equipment. Sampling personnel will change gloves between each sample collection/handling. The samples collected during each operational period will be assembled and catalogued prior to shipping to the designated laboratory.

3.2.4 Quality Assurance/Quality Control Samples

START-3 will collect field duplicate samples as needed during the removal sampling activities. Quality assurance/quality control (QA/QC) samples will be collected according to the following:

- Field blanks will be unused glass fiber filters, both 2-inch and 4-inch sizes. They will be handled like an environmental sample and transported to the laboratory for analysis. Field blanks are used to assess the potential background radioactivity associated with the filters. Field blanks shall be collected and submitted once per day for each day of sampling.

3.3 SAMPLE MANAGEMENT

Specific nomenclature that will be used by START-3 will provide a consistent means of facilitating the sampling and overall data management for the project as defined in WESTON Standard Operating Procedures (SOPs), provided in Appendix B. Any deviations from the sample nomenclature proposed below must be approved by the START-3 Assessment/Inspection Manager. The general nomenclature consists of the following components:

- Sample location.
- QA/QC type (normal, duplicate, blank, etc.).
- Sequence (e.g., which sample it represents).

Sample locations will be identified in the field, as each location is sampled, independent of the physical location of the sample.

3.4 DECONTAMINATION

The nondisposable sampling equipment used during the sample collection process will be thoroughly decontaminated at the end of the field investigation. Equipment decontamination will be completed by using specialized wipes to remove radioactivity from the surface of the samplers, monitors and any other nondisposable equipment. Field screening of the air filter media will be completed using radiation detection monitors which will determine the need for decontamination of the envelopes and baggies and effectiveness of decontamination in order to prevent contamination of the command post and analytical laboratory. All decontamination activities will be conducted in the field.

3.5 SAMPLE PRESERVATION, CONTAINERS, AND HOLD TIMES

Once collected, samples will be securely stored while at the site and until the samples are submitted for analyses. All samples will be placed into labelled envelopes and then into sealable plastic bags. No preservation of these air samples is necessary. The samples will be sent to the designated laboratory by overnight carrier.

Samples that have been analyzed will be disposed of by the designated laboratory in accordance with the laboratory SOPs.

Table 3-1
Sample Collection and Analysis Summary
Las Conchas Fire
Santa Fe, Santa Fe County, New Mexico

Sample Location	Sample Collection Method	No. of Samples	Rationale	Analytical Method
Potentially affected areas – as determined by OSC	2-inch or 4-inch glass fire filters with medium volume air samplers.	18/day plus blanks	Determining if contamination exists and if contamination exist, the level of contamination	Lab specified for: Gross Alpha Counts, Gross Beta Counts, Isotopic Americium, Isotopic Strontium, Isotopic Plutonium, Isotopic Uranium and Gamma Spectroscopy for Isotopic Cesium

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4. ANALYTICAL METHODS

Samples collected by START-3 during the response will be analyzed by an approved subcontracted analytical laboratory that will be performing Alpha Spectroscopy and radioisotope analysis utilizing EPA Method 900.0 Modified and other laboratory specified measures with shortest time available for the turnaround time. Isotopic Americium, Isotopic Uranium, Isotopic Strontium, Isotopic Plutonium will be analyzed for using the Alpha Spectroscopy. Isotopic Cesium will be analyzed for using Gamma Spectroscopy.

5. DATA VALIDATION

START-3 will validate the radioanalytical data by having each data set reviewed by a professional health physicist. A summary of the data validation and findings will be presented in Summary Reports for each residence as part of the final report. START-3 will evaluate the following to verify that the radioanalytical data are within acceptable QA/QC tolerances:

- The completeness of the Laboratory Reports, verifying that all required components of the report are present and that the samples indicated on the accompanying chain-of-custody are addressed in the report.
- The results of laboratory blank analyses.
- The results of laboratory control sample (LCS) analyses.
- The results of MS/MSD analyses.
- Compound identification and quantification accuracy relative to expected isotopic ratios for uranium and its decay products.
- Laboratory precision, through review of the results for blind field duplicates.

Variances from the QA/QC objectives will be addressed as part of the Data Validation Summary Reports.

6. QUALITY ASSURANCE

Quality assurance will be conducted in accordance with the WESTON Corporate Quality Management Manual, dated March 2004; the WESTON START-3 Quality Management Plan, dated July 2006; and EPA Quality Assurance/Quality Control Guidance for Removal Activities, dated April 1990. Following receipt of the Technical Direction Document (TDD) from EPA, a QC officer will be assigned and will monitor work conducted throughout the entire project including reviewing interim report deliverables and field audits. The START-3 PTL will be responsible for QA/QC of the field investigation activities. The designated laboratory utilized during the investigation will be responsible for QA/QC related to the analytical work. START-3 will also collect samples to verify that laboratory QA/QC is consistent with the required standards and to validate the laboratory data received.

6.1 SAMPLE CUSTODY PROCEDURES

Because of the evidentiary nature of sample collection, the possession of samples must be traceable from the time the samples are collected until they are introduced as evidence in legal proceedings. After sample collection and identification, samples will be maintained under the chain-of-custody procedures. If the sample collected is to be split (laboratory QC), the sample will be allocated into similar sample containers. Sample labels completed with the same information as that on the original sample container will be attached to each of the split samples. All personnel required to package and ship coolers containing potentially hazardous material will be trained accordingly.

A typical chain-of-custody record will be completed each time a sample or group of samples is prepared for shipment to the laboratory. The record will repeat the information on each sample label and will serve as documentation of handling during shipment. A copy of this record will remain with the shipped samples at all times, and another copy will be retained by the member of the sampling team who originally relinquished the samples.

Samples relinquished to the participating laboratories will be subject to the following procedures for transfer of custody and shipment:

- Samples will be accompanied by the chain-of-custody record. When transferring possession of samples, the individuals relinquishing and receiving the samples will sign, date, and note the time of the sample transfer on the record. This custody record documents transfer of sample custody from the sampler to another person or to the laboratory.
- Samples will be properly packed for shipment and dispatched to the appropriate laboratory for analysis with separate, signed custody records enclosed in each sample box or cooler. Sample shipping containers will be custody-sealed for shipment to the laboratory. The preferred procedure includes use of a custody seal wrapped across filament tape that is wrapped around the package at least twice. The custody seal will then be folded over and stuck to the seal to ensure that the only access to the package is by cutting the filament tape or breaking the seal to unwrap the tape.
- If sent by common carrier, a bill of lading or air bill will be used. Bill of lading and air bill receipts will be retained in the project file as part of the permanent documentation of sample shipping and transfer.

6.2 PROJECT DOCUMENTATION

All documents will be completed legibly and in ink and by entry into field logbooks. SCRIBE Enterprise is designed to give SCRIBE users the ability to synchronize the SCRIBE field data to the RRC-EDMS Web Hub. This allows analytical data managers and data validators access to data to perform reviews from anywhere with an Internet connection. SCRIBE Enterprise is designed to take the analytical data management functionality of the EPA SCRIBE software and make it available for multiple users to access on one site.

6.2.1 Field Documentation

The following field documentation will be maintained:

Field Logbook

The field logbook is a descriptive notebook detailing site activities and observations so that an accurate, factual account of field procedures may be reconstructed. All entries will be signed by the individuals making them. Entries should include, at a minimum, the following:

- Site name and project number.
- Names of personnel on-site.
- Dates and times of all entries.

- Description of all site activities, including site entry and exit times.
- Noteworthy events and discussions.
- Weather conditions.
- Site observations.
- Identification and description of samples and locations.
- Subcontractor information and names of on-site personnel.
- Dates and times of sample collections and chain-of-custody information.
- Records of photographs.
- Site sketches.

Sample Labels

Sample labels will be securely affixed to the sample container. The labels will clearly identify the particular sample and include the following information:

- Site name and project number.
- Date and time the sample was collected.
- Sample preservation method.
- Analysis requested.
- Sampling location.

Chain-of-Custody Record

A chain-of-custody will be maintained from the time of sample collection until final deposition. Every transfer of custody will be noted and signed for and a copy of the record will be kept by each individual who has signed it. The chain-of-custody is discussed in Subsection 6.1 Sample Custody Procedures.

Custody Seal

Custody seals demonstrate that a sample container has not been tampered with or opened. The individual who has custody of the samples will sign and date the seal and affix it to the container in such a manner that it cannot be opened without breaking the seal.

Photographic Documentation

START-3 will take photographs to document site conditions and activities as site work progresses. Initial conditions should be well documented by photographing features that define the site-related contamination or special working conditions. Representative photographs should

be taken of each type of site activity. The photographs should show typical operations and operating conditions as well as special situations and conditions that may arise during site activities. Site final conditions should also be documented as a record of how the site appeared at completion of the work.

Each photograph will be recorded in the logbook with the location of the photographer, direction the photograph was taken, the subject of the photograph, and its significance (i.e., why the picture was taken).

6.2.2 Report Preparation

At the completion of the project, START-3 will review and validate all laboratory data and prepare a draft report of field activities and analytical results for EPA OSC review. Draft deliverable documents will be uploaded to the EPA TeamLink website for OSC review and comment.